

## **SECTION 4**

### **Forested Land Management**

#### **4.1 IDENTIFYING PROBLEMS**

##### **4.1.1 What Was Already Known**

Generally speaking, forested land does a better job of protecting surface water quality than do most other land conditions and uses. Forested land helps control or avoid erosion in several ways. The leaf canopy in forests help absorb the energy of heavy rain, slowing the erosive effects of direct rain on bare soil. Root structures in the soil also help control erosion from the forest. Leaf litter and decaying wood help build a healthy soil where erosion-controlling plant life and well-balanced nutrients can better serve a healthy ecosystem. Shade provided by trees helps maintain water temperatures necessary for fish habitat.

With regard to forested land-related issues, what was already known was that much of the north-central portion of Morgan County is currently forested.

Approximately 60% of the Lambs Creek/White River watershed in north-central Morgan County is forested. Aerial photographs indicate, and ground observations confirm that there is a tree “canopy” covering over half of the land in the watershed. This area includes such forested properties as: Bradford Woods (owned by the Indiana University Board of Trustees in the Sycamore Creek sub-watershed); sports clubs like the Mallory Conservation Club; properties owned and protected by conservation groups like the Central Indiana Land Trust; conservation areas such as AES/IPALCO’s Pritchard Park; and many privately held woodlots scattered throughout the watershed.

We knew that as a general rule, that this healthy forest canopy can have a great deal of protective value to water quality, depending upon its proximity to waterways

and coverage in the watershed. Forested land helps protect water quality in many ways, most notably by controlling erosion.

##### **4.1.2 What Was Learned During the Process**

During the watershed study and planning process, participating stakeholders learned the following fundamental facts:

- (1) Roughly 60%, or 32,000 acres of the watershed is forested.
- (2) The majority of soils in the watershed are highly erodible, most typically on the steep, forested slopes.
- (3) With the exception of a few areas where *E. coli* bacteria was above water quality standards, most of the chemistry and biological data gathered in the watershed indicated healthy surface water environments in the forested stream segments.
- (4) Forested land is an attractive amenity in Morgan County, and many in the development community as well as local homeowners confirmed that the rolling, forested hills that are prevalent in the watershed are indeed an aesthetic resource that increases property values in the area.
- (5) Several public and private sector programs do exist to help landowners protect and properly manage their forests, yet many are not well publicized. Several on the Land Use Committee felt that there are still not enough programs currently available to landowners to protect forested lands.
- (6) 34 properties totaling 2029 acres in the watershed are enrolled in the Classified Forest Program (source: Chuck Ratts, District Forester).
- (7) Education programs that help

teach both children and adults about the water quality protection benefits of forests are lacking in Morgan County.

(8) Logging is very prevalent in Morgan County, and several operations will “cold call” landowners, offering to purchase their timber.

(9) While required in several surrounding states, Best Management Practices for logging and timber management is not required by Indiana State Law. Kentucky, Ohio, Virginia, and West Virginia all have laws that require BMPs for logging operations. If Indiana is to remain unregulated in this regard, then education and market-based encouragement of BMPs will be essential to maintaining the water quality protection value of forests.

(10) While many of the logging operations doing business in Morgan County implement Best Management Practices as part of their operations, there are still several that do not. Lack of BMPs at some logging locations can cause water quality impairments in Morgan County.

#### **4.1.3 Causes or Probable Causes of Impairments and Threats**

While virtually the entire county has been timbered at one time or another over the last 150 years, much of the steeply sloped areas of the county have returned to a state of mature forest. No significant parcels in the watershed contain what is considered “old-growth” forest.

The primary reason that the watershed is currently 60% forested is that most agricultural practices are not practical in the vast areas of steep slopes that dominate the watershed. Only the northern portion of the watershed and the White River Valley are flat enough for practical use in cropland or livestock operations. In addition to lack of prime farmland, population and associated development have also had little impact on

the forested areas. Until recently, population growth has been slow in the rural areas of the county, leaving the forest canopy generally intact. Finally, many landowners have maintained timber on their property for either aesthetic reasons or because they realize that the topography and soils are not conducive to permanent clearing.

A potential threat to surface water quality in the watershed is the loss of forest canopy. The most probable threats to the existing forest canopy include:

- (1) Continued development resulting from population growth and urban sprawl.
- (2) Poor or no implementation of BMPs by logging operations .
- (3) Disease and/or unnaturally occurring invasive, herbivorous insects.

#### **4.1.4 Sources or Probable Sources of Pollutants or Conditions Causing Water Quality Impairments**

Observations and field surveys completed during this watershed study and planning project have concluded that there are very few sources of pollutants or conditions causing water quality impairments in the most forested areas of the watershed. Such sources are usually scattered and include:

- (1) Logged areas or areas being logged where BMPs have not been implemented and excessive erosion has caused sedimentation in surface water areas. An example of such a problem is depicted in Figure 4.1. This shows where a ravine draining a portion of the eastern shore of Patton Lake (Lambs Creek) has deposited nearly two feet of soil covering more than an acre in just two years after only 16 acres of upstream logging was poorly managed, resulting in excessive erosion.
- (2) Open pastures in the forested areas where livestock have access to the stream. The horse farm in Figure 4.2 shows an open pasture area in an

otherwise forested section of the Lambs Creek watershed.

(3) Open dumps found scattered throughout the watershed on both private and public properties. Chemicals and other potential pollutants have been identified in several of these dumps. Figure 4.3 provides an example of one of many open dumps found in the watershed.

Figure 4.1: Sediment that has filled in a large area of Patton Lake, allegedly the result of upstream logging without implementation of BMPs.



#### 4.1.5 Prioritization

Prioritization for the protection of forested lands was directed to those areas that:

- (1) Currently have forest canopies.
- (2) Were identified as having highly erodible soils.
- (3) Were likely candidates for forest protection programs (i.e., parcels containing 10 acres or more of contiguous forest).

of how data was used to prioritize forested areas for protection. Figure 4.3 provides an aerial photographic view of the watershed, where trees or forested areas can be identified. Figure 4.4 links forest canopy with highly erodible soils, providing priority areas for forest protection and preservation.

Figure 4.2: The photos below depict a very well maintained horse farm in the Lambs Creek subwatershed, above Patton Lake. This is typical of small “breaks” in the forest canopy.



The maps (figures 4.3, 4.4, and 4.5) on the following three pages show the chronology of examining forest canopy to highly erodible areas, to property parcels (the size of which has relevance the qualification for forest preservation programs.

Figure 4.3: 1998 aerial photography

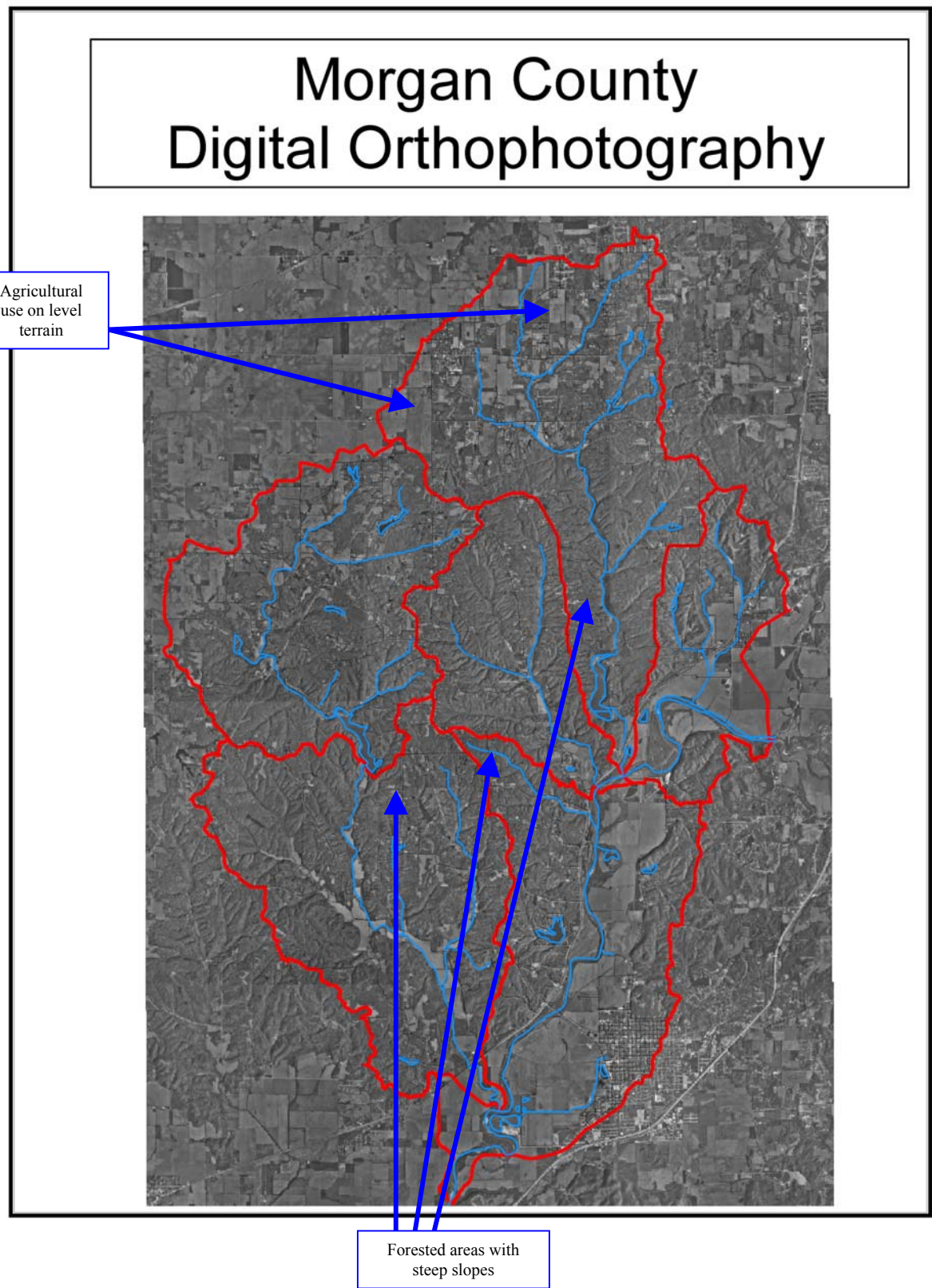




Figure 4.4: Map of highly erodible soils

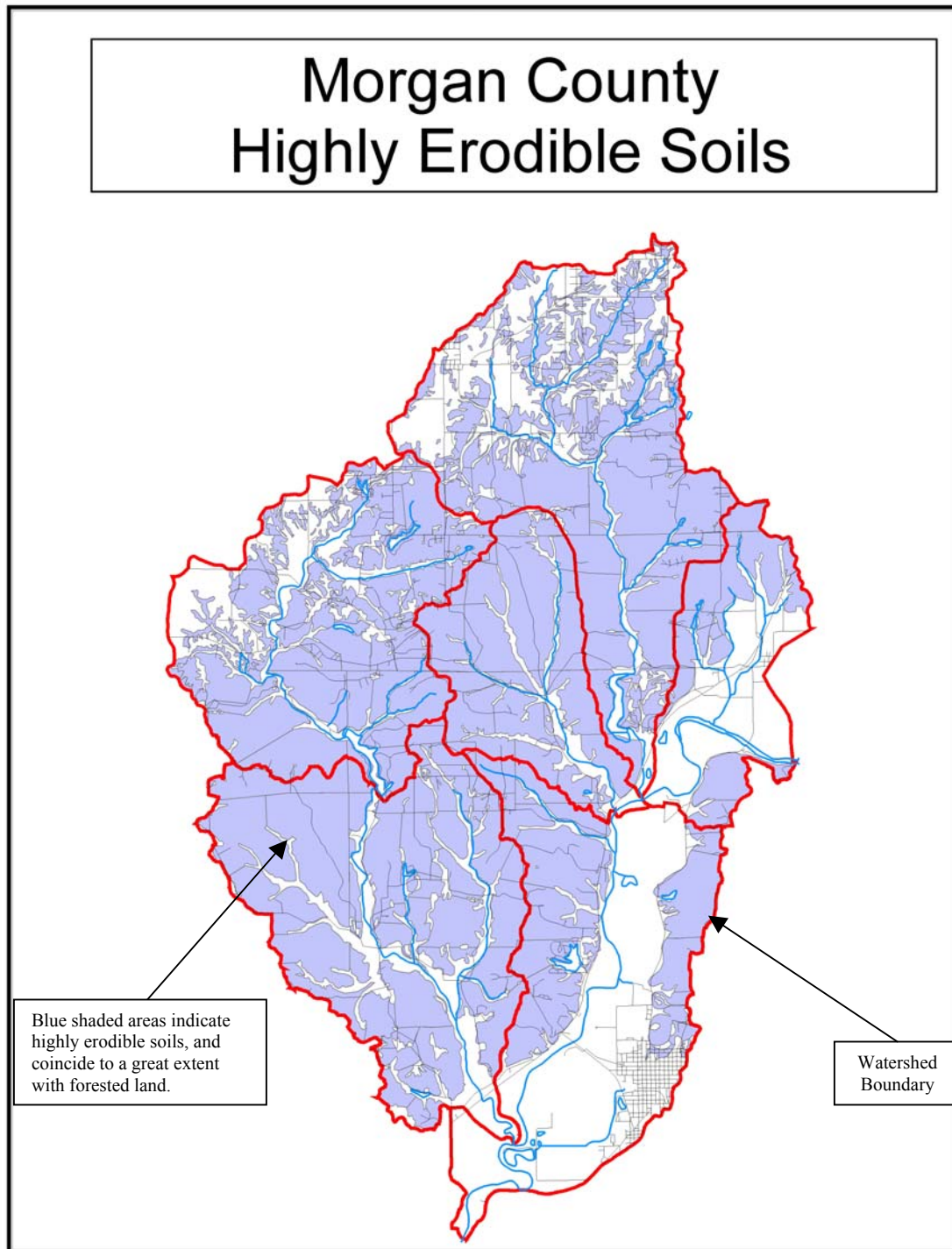


Figure 4.5: Property boundaries in the watershed

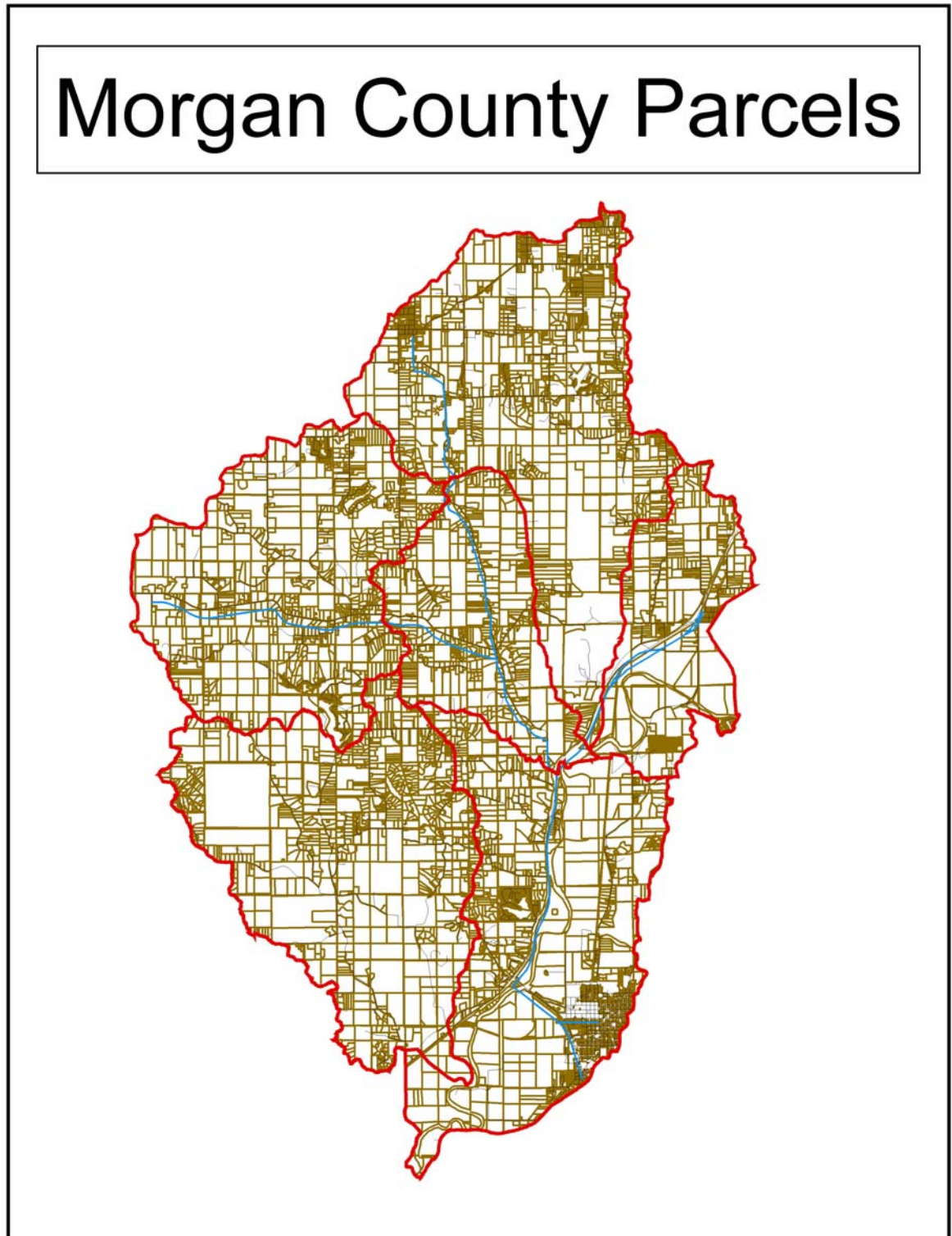
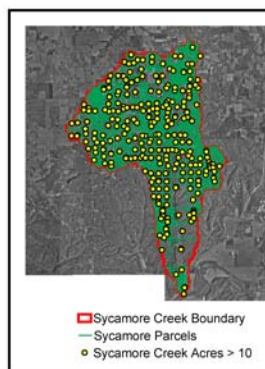
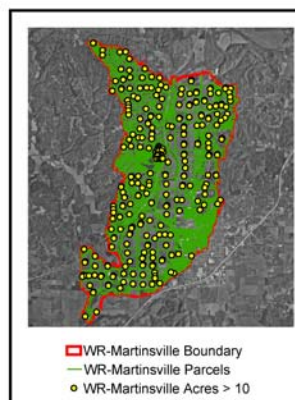
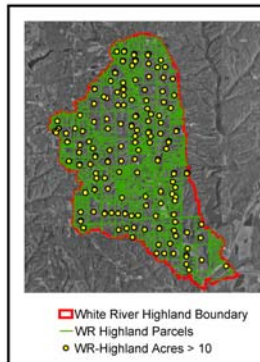
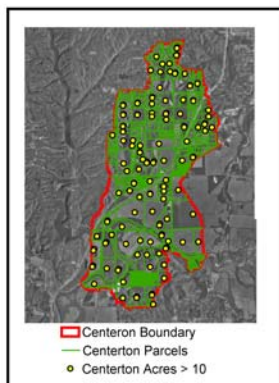
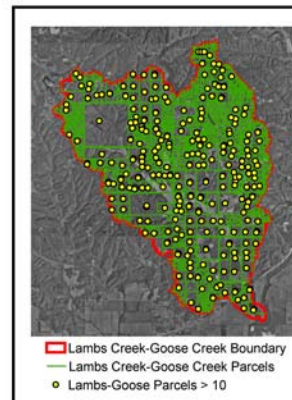
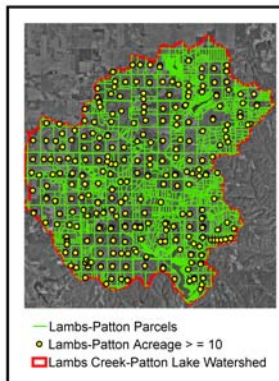


Figure 4.6: Aerial photos of subwatersheds with property boundaries (parcels of 10 acres and above are marked with yellow dot)



## **4.2 GOALS AND DECISIONS**

### **4.2.1 Goals for Improvement and Protection**

Primary Goal #4 of this Watershed Management Plan, as outlined in Section 1 of this document is, “to the greatest extent possible and with existing and potential resources, improve and protect water quality in the watershed with the intention, where applicable and appropriate, to achieve and maintain state water quality standards.”

The Morgan County Watershed Initiative designed and conducted its 6<sup>th</sup> quarterly public stakeholder meeting in November of 2002 with a targeted theme of forested land management, forest protection programs, and the relationship between a healthy forest and water quality. The meeting provided a great deal of information with presentations from the watershed coordinator, the State’s District Forester, Pike Lumber Company, and the Central Indiana Land Trust.

In order to achieve Primary Goal #4 of this Watershed Management Plan, the following objectives related to forested land management were collectively set by the Land Use Committee shortly after the public stakeholder meeting in November:

#### ***Objective #4-1***

**Achieve, over a ten-year period, no net loss of forest canopy in the watershed.**

#### ***Objective #4-2***

**Achieve 100% Implementation of BMPs where logging is occurring in the watershed.**

### **4.2.2 Management Measures**

Achieving the goals set by the Watershed Initiative for water quality protection through the protection of forested land will involve ongoing and never-ending processes, policies, and actions. In order to achieve the two goals aimed at protecting water quality through forest protection, the Soil and Water Conservation District will

implement several interrelated programs with the help and participation of local businesses, industry, and other government entities.

### **4.2.3 Loads or Contributions for the Management Measures**

Since the primary objectives and actions set forth in this section are *preventative*, calculating and estimating load reduction is not necessary for this section.

### **4.2.4 Action Plan**

Voluntary measures are recommended for the watershed that can help maintain a 60% forest coverage. These actions include:

**Zoning Considerations:** Politically speaking, it would be extremely challenging to pass any regulatory measure in Morgan County that would have enforceable authority to control private land and timber harvesting and/or clearing for development or agriculture. However, it is proposed that the SWCD and the Watershed Initiative work directly with the County Planning Department to revisit and re-define “critical areas” in the County’s next Comprehensive Land Use Plan. Critical area delineation should consider the value of forest canopy in relation to water quality protection, especially in areas where rare or endangered species have been identified in the receiving stream.

**Landowner Education:** Increase education to landowners with regard to the water quality value of their forests and programs that are available to help them protect their forested land. To achieve this objective, the Soil and Water Conservation District will pursue grant funding in order to hire part-time staff person to conduct the following activities:

#### **Actions to support Objective # 4-1**

##### ***Action 4-1***

The SWCD will hire a contract employee who will heavily “market” forest protection and management programs such as the



Classified Forest Program and agricultural programs such as CRP, etc. throughout the watershed but specifically targeted to priority areas identified in the watershed plan, based upon soils, property ownership, tree canopy, etc.

***Action 4-2***

Through the contract employee, provide technical assistance to landowners, farmers, and forest owners regarding forestry and agricultural conservation best management practices.

***Action 4-3***

Through the contract employee, provide guidance to landowners, farmers, and forest owners regarding public and private conservation programs such as IDEM/EPA cost-share programs (Section 319), USDA cost-share programs (EQIP, CRP, etc.), IDNR conservation programs (CFP, CWP, etc.), and private programs such as the Nature Conservancy, the Central Indiana Land Trust, etc.

***Action 4-4***

Implement an Incentive-Based, Voluntary Mitigation Program: Develop consistent criteria for and implement a program through the local Planning Department with assistance from the SWCD, where public appreciation (through signage, proclamations, etc.) are implemented where the planting of 1:1 or higher ratio of trees lost is implemented by development and land use change.

***Action 4-5***

Promote, assist where possible, and publicly support corporate stewardship programs such as the AES/IPALCO challenge, which involved the planting of 6000 trees.

***Action 4-6***

Initiate tree sales and/or tree giveaways through the SWCD and its watershed partners.

***Action 4-7***

Promote the concept of cluster development in new subdivisions where average lot size requirements are met through a combination of densely populated areas among preserved green space within a subdivision.

**Actions Necessary to Achieve  
Objective #4-2**

***Action 4-8***

Establish, and implement Market-Based Incentive Programs for those who implement BMPs: The SWCD and its partners in the Watershed Initiative will work with the State Implementation Committee of the Indiana Forest Industry Council to expand the number timber and chip buyers in Morgan County (and surrounding areas) that require Sustainable Forestry Initiative Logger Training. An initial step to reach this objective will be to identify all buyers in Morgan County and work as a partner with the State Implementation Committee in targeting those in the watershed to adopt such timber buying policies.

***Action 4-9***

Enhance forestry education: The SWCD will work with and help promote the Indiana Forest Industry Council's Sustainable Forestry Initiative Logger Training and assist with arrangements for such training when possible. Additionally, the IDNR periodically provides educational workshops for forestry methods that help protect the environment. The SWCD will help promote and assist with these programs where appropriate.

***Action 4-10***

Develop and utilize Public Honor Incentives: It is recommended that the Morgan County Commissioners establish an award to provide annually to a timbering operation that practices BMPs. The SWCD, its watershed partners, and the IDNR will all assist with the development of criteria for this award.

Figure 4.7 (courtesy of Pike Lumber Company, Inc.) – Use of this temporary bridge BMP protects streams and stream banks during logging operations



Figure 4-8: Proper construction and use of a logging road using appropriate BMPs.



#### 4.2.5 Resources

Funding will be necessary for equipment, staff, and many overhead costs. Funding resources that will be pursued (see Section 10 for funding for specific actions) will include: Section 319 watershed management funding from US EPA through IDEM; similar programs such as Section 104(b)(3)

and Section 205(j) funding; Lake and River Enhancement (LARE); and private donations.

#### 4.2.6 Legal Matters:

At this time, the hope is that the voluntary implementation of BMPs while logging can increase to the level to meet the objectives of this plan. It is hoped that through the education and incentive programs discussed herein, that this will occur. Legal matters are therefore not of concern at this time.

### 4.3 MEASURING PROGRESS

#### 4.3.1 Indicators Selected to Determine Progress

The forestry professionals who participated with the Land Use Committee and helped set the “no net loss” goal, agree that there is no practical means to accurately measure the progress of this goal. The indicators selected and listed below will not provide scientifically sound or accurate conclusions, however they will help the SWCD and its partners monitor the goal of no net loss of forest canopy.

(1) Review aerial photographs and satellite imagery on an annual basis to provide a general measure of forest canopy coverage in the watershed and whether the percentage of canopy has increased or decreased. Maintain and publish records of observations.

(2) Maintain records of development where net tree loss occurs, maintain records of all mitigation planting actions that occur, and compare the two on an annual basis.

(3) Maintain visual observations where logging has occurred to ensure that the natural and/or managed regeneration of tree growth is occurring within one year of cutting. Maintain record and aerial photography as appropriate.

(4) As is the focus of this entire watershed management plan, maintaining and improving water quality will be the ultimate

indicator of overall improved water quality, which is the ultimate purpose of the protection and maintenance of the forest canopy in this case. Therefore, water quality monitoring will continue through Section 319 and other funding mechanisms. This monitoring will help the SWCD judge whether or not we are maintaining and/or improving water quality. It's relationship to the forest protection effort will however, be difficult to specifically identify and confirm.

#### **4.3.2 Monitoring Indicators**

Indicators of success will include percentages of forest canopy observed on aerial photography as well as records maintained showing mitigation through tree planting where land use change has occurred.

Water quality monitoring will also serve as an overall indicator of the progress of reaching the ultimate goal of water quality protection and improvement.

#### **4.3.3 Re-Evaluation of Plan**

The Morgan County SWCD will be responsible for the regular review and update of this Watershed Management Plan. This Plan should be evaluated in partnership with the IDNR District Forester, and the private timber management community on a regular basis to document and celebrate progress; assess the effectiveness of efforts; and to modify the action items, if needed. A summary of the actions proposed for development, planning, and zoning can be found in Chapter 10.